

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern District

RECREATION USE SURVEY OF
BIG GRIZZLY CREEK, PLUMAS COUNTY
1998

Technical Information Report No. 99-2

Prepared under the direction of

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by

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This report was prepared to summarize information collected under Work Order 1500-4704 to document recreation and fishery enhancement provided by a revised operation of Lake Davis. This report has received only limited review; it is intended for internal use and should be considered preliminary and subject to revision.

June 1999

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SUMMARY

A survey of streamside recreation along Big Grizzly Creek, Plumas County, was conducted in 1998. The purpose of the survey was to estimate the amounts and types of recreation use and angler success occurring along the creek with augmented flow from Lake Davis through Grizzly Valley Dam. Another important purpose of conducting the survey for a second year in a row was to document downstream impacts and restoration following the Department of Fish and Game's Lake Davis Northern Pike Eradication Project. The stratified random sample survey combined roving use counts with interviews of recreationists in order to gather information on recreation activities, visitor origin, and angler success.

There were an estimated 4,100 hours of recreation use on Big Grizzly Creek between April 25 and November 15, 1998. The most frequently observed activity in 1998 was walking for pleasure, followed by fishing, and bicycling. About 54 percent of all visitors came from Nevada and 52 percent of all anglers lived in the northeast counties of California, mostly Plumas County. A large proportion of anglers and visitors lived in the City of Portola. Anglers caught an estimated 100 rainbow trout and a few brown trout in 800 hours of fishing.

INTRODUCTION

Big Grizzly Creek below Grizzly Valley Dam offered an opportunity to implement the Department of Water Resources' water management policy, adopted in 1975, which states, "Instream uses for recreation, fish, wildlife, and related purposes shall be balanced with other uses." When Grizzly Valley Dam began operation in 1966, streamflows in Big Grizzly Creek below the dam were increased and stabilized. Minimum flows were increased from about 0.5 cubic feet per second to 8 cfs. Fishing and related streamside recreation were enhanced. An instream flow needs assessment later indicated that increasing flows to 20 cfs would further increase trout habitat over the post-project levels to near optimum levels without significant detriment to lake recreation (Haines 1982).

On a trial basis, Grizzly Valley Dam began a revised operation in June 1982. The Department of Fish and Game and DWR agreed to further revise operating criteria and releases in a 1994 agreement which was first implemented in 1998. Monitoring downstream recreation use, fish populations, and trout catch will document changes to these resources caused by the modified flow release schedules. The agreement further obligated DWR to monitor impacts to reservoir water levels, if any, of this revised operation over the next several years.

This report describes the recreation use survey, creel census, and results for the 1998 trout season, April 25 to November 15. A separate report, to be prepared by the Department of Fish and Game, Contract Services Section, will describe a fish population survey conducted in September 1998.

Description of Study Area

Big Grizzly Creek is a major tributary of the Middle Fork Feather River (a designated National Wild and Scenic River) within the Plumas National Forest. The

lowest 6.25 miles of the creek is below Grizzly Valley Dam and Lake Davis. From an elevation of 5,670 feet at the dam, the creek drops through steep-walled canyons, flows through the eastern edge of Smith Peak State Game Refuge, crosses under Highway 70 about 2 miles east of the City of Portola, and joins the Middle Fork Feather River on the western side of Sierra Valley at an elevation of 4,870 feet (Figure 1).

Grizzly Road, which also crosses Highway 70, roughly parallels the creek, providing easy access to the mouth of the creek and to Lake Davis. About 3.8 miles upstream from the mouth is a dirt road, called Burnham Ranch Road, which provides public access to some of the more rugged areas of the creek. This road may be improved in the next few years; private lots are being developed adjacent to the public access area described below.

In 1986, DWR used Land and Water Conservation Funds to purchase a strip of land along Big Grizzly Creek to provide public fishing access. This created a public access area below the dam nearly three miles long, although portions of the surrounding area are privately owned and typically posted against trespass. Overall, about 4.25 miles of the 6.25-mile reach of Big Grizzly Creek below Grizzly Valley Dam is typically used by anglers and other recreationists. The remaining two miles of the creek are generally inaccessible and/or clearly posted against trespass.

Among other things, Big Grizzly Creek provides visitors with opportunities for trout fishing (predominantly rainbow trout), walking and hiking, flora and fauna study, relief from summer heat in the form of swimming and wading, and enjoyment of fall colors. However, public access is prohibited at Walton's Grizzly Lodge, a camp for children at the "Grizzly Ice Pond". The camp uses the pond for fishing and swimming and the surrounding area for other camp activities. Lodge visitor use was not measured and is not included in our estimates.

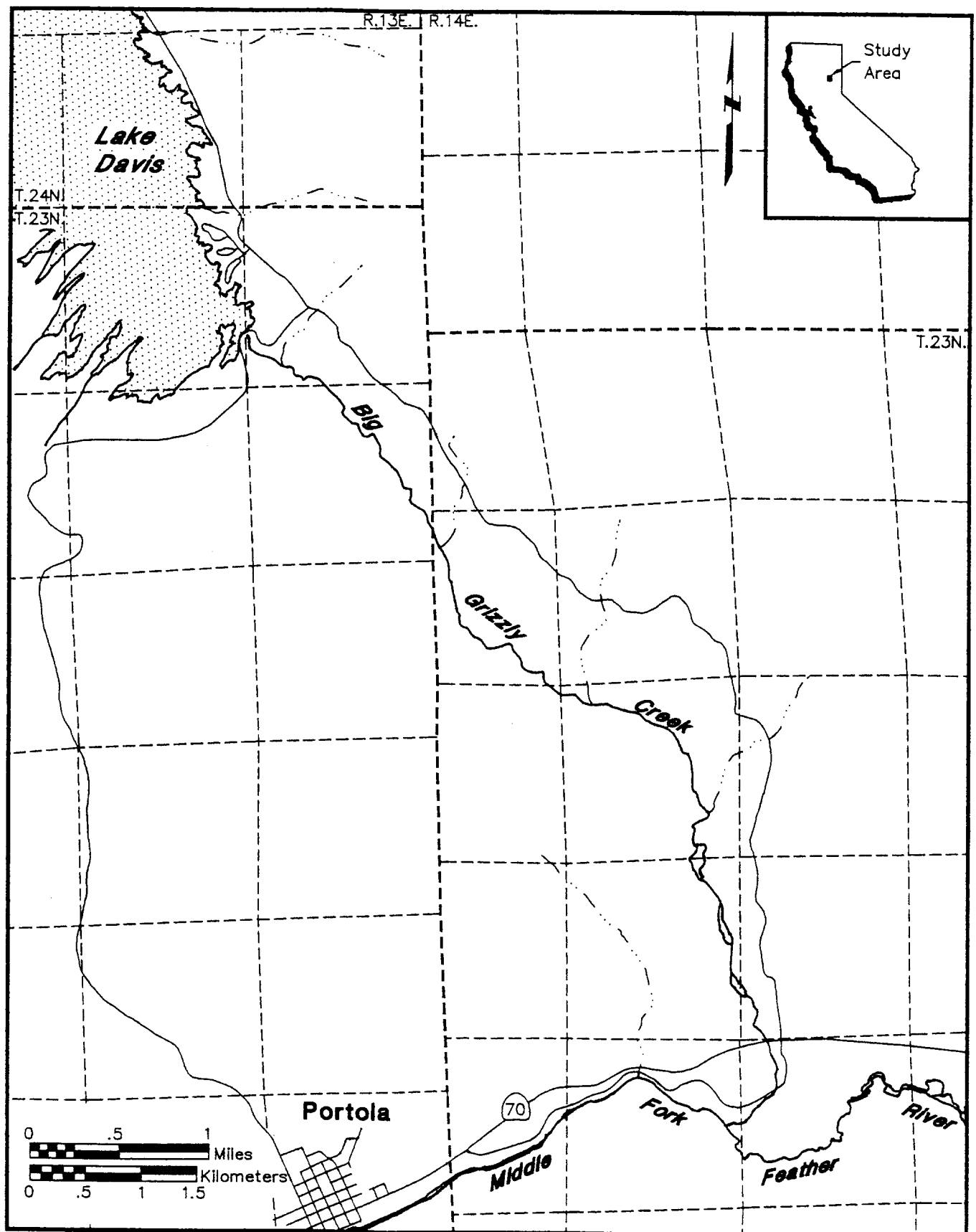


Figure 1. Big Grizzly Creek, Pumas County, 1998.

The general area has a rich history of gold mining, farming and ranching, lumber production, and railroading. In recent decades, recreation use in Plumas County has increased greatly, with water-related uses a major attraction. Employment today is divided among services, government, timber harvesting, ranching, and farming.

Grizzly Valley Dam was built as part of the State Water Project in 1966. Originally planned to supplement irrigation in Sierra Valley, it was completed mainly to benefit reservoir recreation and the fishery downstream in Big Grizzly Creek, and to provide domestic water to the City of Portola. Releases for recreation, fish, and wildlife are based on the water surface elevation on May 1, releases were 23 cfs during most of the 1998 recreation season. In addition to the releases for downstream fisheries and water rights, the reservoir is usually operated to prevent spill. This requires large releases of up to 250 cfs in the early spring of some years (DWR 1974), and as a result spill has been negligible since 1986.

In October 1997 the Department of Fish and Game chemically treated Lake Davis to eradicate non-native northern pike. This action and the resultant closure of the lake until July 1998 had both indirect and direct impacts on recreation and fishing use on Big Grizzly Creek. An important purpose of conducting a Big Grizzly Creek recreation use survey for a second year in a row was to document some effects the project had on recreation use in this area.

METHODS

Recreation Use Counts

Use counts were made on randomly selected dates within nine survey strata using the optimum allocation method described by Abramson and Tolladay (1959). Twenty-nine days of the 205-day period from April 25 through November 15, 1998, were surveyed: both days of the opening weekend of trout season, 5 of 8 holiday weekend days, 11 of 143 weekdays, and 11 of 52 weekend days. Five one-hour counts of recreation use were made in the study area each day at regular periods, scheduled according to the number of daylight hours (Appendices I and II).

The surveys were made from vehicle or on foot, as necessary, to check access and recreation sites. Recreationists were counted and recorded by recreation activity. The five daily counts were totaled and multiplied by factors that accounted for recreation use in the daylight periods not counted. Similarly, the resulting daily figures were expanded to estimate total recreation hours for all days in each stratum. Adding the stratum totals provided an estimate of recreation hours for the study period.

Creel Census

Anglers along Big Grizzly Creek were contacted on 13 of the 29 survey days to determine fishing success. The county of residence and length of time spent fishing so far that day were recorded for each angler contacted. Fish censused were counted, measured (fork length to nearest 0.5 cm), and identified to species. On the other 16 survey dates, no anglers were observed using the creek (or anglers left the creek before they could be interviewed). To determine total catch, the catch per hour was multiplied by estimated hours of fishing for each stratum and the totals for each stratum were summed.

RESULTS

Recreation Use

Total recreation use on Big Grizzly Creek was estimated at 4,100 recreation hours (+/-1,000 hours) for the period April 25 to November 15, 1997. Counts of people along Big Grizzly Creek indicated that, overall, walking for pleasure was the major activity, followed by fishing, bicycling, miscellaneous uses, relaxing, and sightseeing (Table 1).

Table 1. Recreation Hours by Activity
Big Grizzly Creek, 1998

Activity	Recreation Hours	Percent
Walking	900	22
Fishing	800	20
Bicycling	700	17
Relaxing	500	12
Sightseeing	300	8
Picnicking	100	2
Swimming and wading	100	2
Miscellaneous/other*	700	17
Total	4,100	100

* Includes horseback riding, children playing, and off-highway vehicle use.

Nineteen interviews were conducted on the survey dates, representing 35 people. The interviews revealed what people said they did during their visit. About 60 percent of the visitors to Big Grizzly Creek said they were just relaxing, followed by sightseeing (54 percent), walking for pleasure (34 percent), picnicking

(26 percent), fishing (23 percent), and swimming and wading (17 percent). These percentages add up to more than 100 percent because many people took part in more than one activity during their visit.

About 63 percent of the interviewed visitors were day users (i.e., returned home at night), and 37 percent stayed overnight somewhere in the area (usually at one of the cabins along the creek). Camping appears to be an infrequent activity, but one observation of note is the apparent nocturnal use of the property purchased by DWR in 1986. Judging by the amount of bonfire scars and alcohol-related garbage consistently found in the area, it appears that this location may be a popular night time "party spot". Also, a fair amount of off-road damage to the surrounding area is evident.

Visitor origin was predominantly from Nevada, generally the Reno/Sparks area (54 percent). Visitors from the northeast counties, primarily Plumas, totaled 34 percent of all users. Sacramento Valley visitors made up 9 percent while 3 percent came from Southern California.

Creel Census Data and Angler Success

During the 1998 trout season, 48 anglers were contacted. They had fished 44 hours, with an observed catch of 10 rainbow trout (Oncorhynchus mykiss) and 1 brown trout (Salmo trutta). In addition, 24 trout were reported to have been caught and released.

Total angling use was estimated at 800 hours (± 600 hours), the equivalent of about 500 angler days, with an estimated take of 100 rainbow trout and a few brown trout. The low amount and erratic pattern of fishing use leads to an unusually large confidence interval (75 percent). Based on trout reported caught and released, an additional 250 trout were estimated to have been caught and released.

The mean length of rainbow trout measured during 1998 was 23.1cm (9.1 in) with a range of 19.5 to 29.5 cm (7.7 to 11.6 in; Appendix III). The one brown trout creel was 23 cm fork length.

Big Grizzly Creek angler origin (Figure 3) was pre-dominantly from the northeast counties (52 percent). Anglers from Nevada, mostly Reno and Sparks, totaled 21 percent. Seventeen percent of anglers came from the Sacramento Valley Counties, six percent came from the Mountain Counties and four percent came from the Bay Area Counties.

About 79 percent of the anglers fished with bait, about 50 percent with lures and about 15 percent with flies. These percentages add up to more than 100 percent because 44 percent of the anglers used more than one type of terminal gear during their effort.

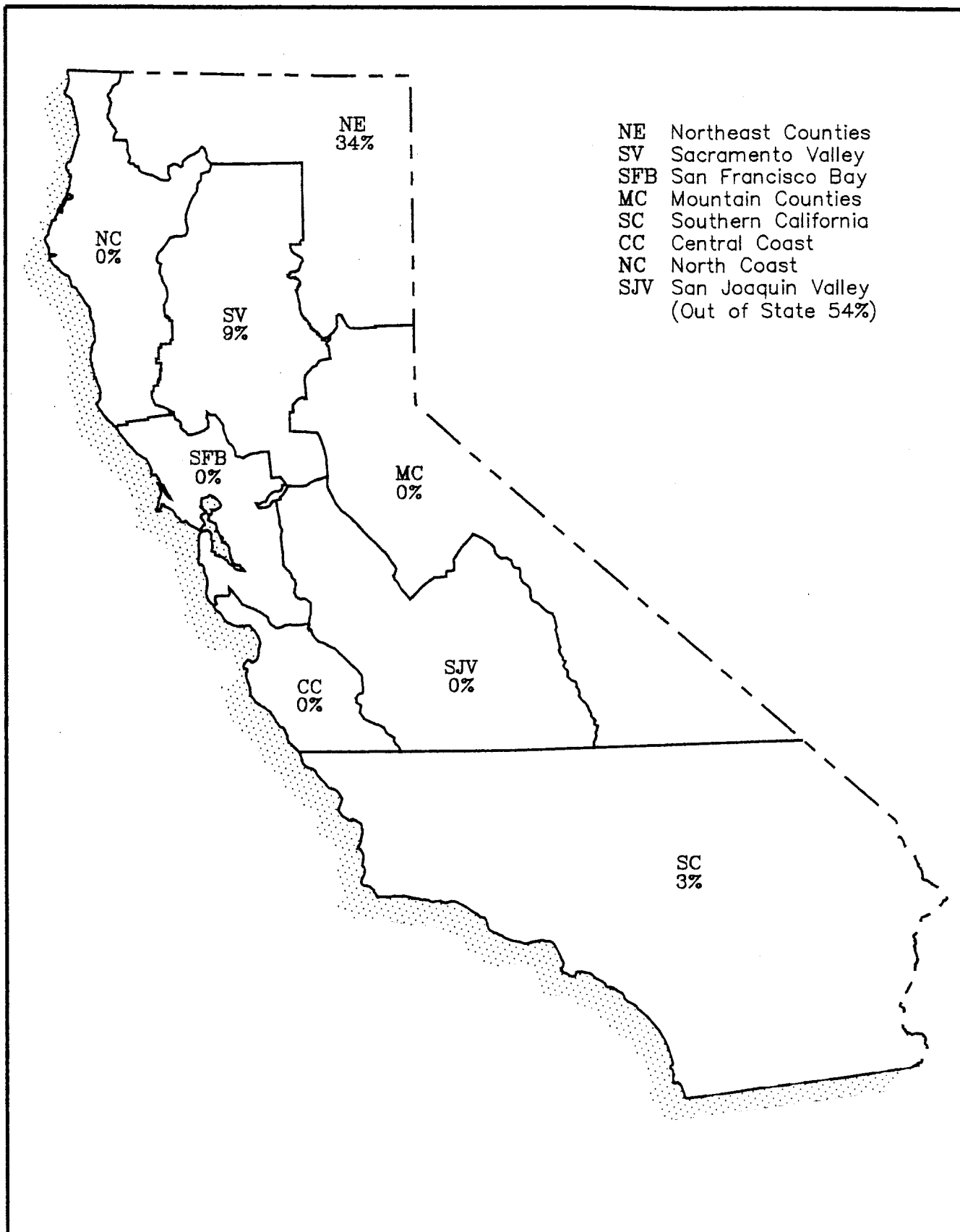


Figure 2. Big Grizzly Creek, Visitor Origin by County Groups, 1998.

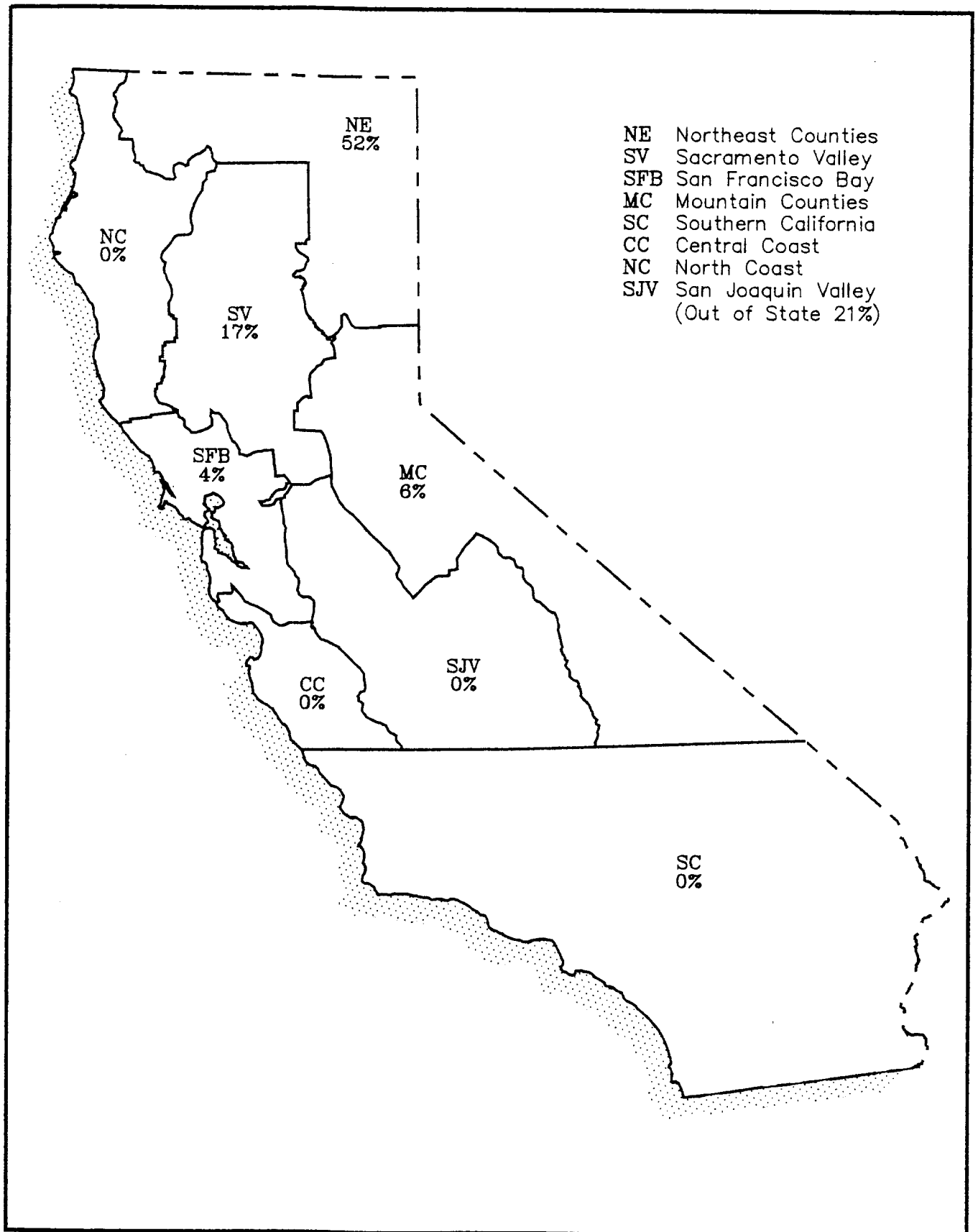


Figure 3. Big Grizzly Creek, Angler Visitor Origin by County Groups, 1998.

DISCUSSION

Counts and Creel Census

Most people using the creek were readily observed during the use counts. Vehicle access points were checked on each count, and people were found for most vehicles. Vehicles of U.S. Forest Service, DWR workers, game wardens and other non-recreationists are sometimes parked along the road, normally making vehicle counts a poor index of recreation use. About five percent of the estimated fishing use was represented in the creel census.

Comparison With Use in 1986, 1991, 1994, and 1997

Comparison of the 1998 data with previous surveys conducted on Big Grizzly Creek in 1986, 1991, 1994 and 1997 (Tittle 1987; J. Brown 1992; Scott 1995; Elkins 1999) shows a continued decrease in total recreation use since a peak in 1994. Patterns of recreation use and fishing at Big Grizzly Creek apparently have also changed. The recreation survey reflected relatively low use, similar to the earliest two studies. Low use in 1998 was most likely attributable to DFG's Pike Eradication Project and the closure of the Lake Davis Recreation Area. Table 2 summarizes differences observed over the years.

During the 1998 trout season, anglers fished an estimated 800 hours, with an estimated catch of 100 rainbow trout and a few brown trout. Thus, the use in 1998 was similar to that in 1991 (a drought year with low flow), but considerably less than in 1986 and 1994 and slightly less than in 1997. The catch was the second lowest observed in the five years surveyed since 1986 (Table 3). Angler success (trout/angler-hour) has generally declined each year. The mean length of trout in 1998 (10.1 in) was greater than either 1986 (9.0) and 1991 (8.4 in), but less than in 1994 (10.4 in) and 1997 (11.2 in).

Table 2
Estimated Recreation Hours by Activity,
Big Grizzly Creek 1986, 1991, 1994, 1997

Activity	Year				
	<u>1986</u>	<u>1991</u>	<u>1994</u>	<u>1997</u>	<u>1998</u>
Fishing	2,900	800	2,200	1,300	800
Swim/Wade	800	1,000	600	*	100
Camping	*	*	*	700	*
Relaxing	200	200	1,000	500	500
Sightseeing	30	200	2,300	500	300
Walking	20	400	1,000	1,000	900
Miscellaneous/Other**	450	1,100	1,900	1,000	1,500
Totals	4,400	3,700	9,000	5,000	4,100

* Negligible, included in miscellaneous for that year.

** Includes: picnicking, horseback riding, shooting, bicycling, and OHV-use.

Table 3
Comparison of General Recreation, Fishing Use, and
Angling Quality on Big Grizzly Creek

Activity	Year				
	<u>1986</u>	<u>1991</u>	<u>1994</u>	<u>1997</u>	<u>1998</u>
Recreation Use (Hours)	4,400	3,700	9,000	5,000	4,100
Fishing Use (Hours)	2,900	800	2,200	1,300	800
Rainbow Trout Caught (Estimated)	2,300	500	900	200	100
Brown Trout Caught (Estimated)	50	0 creeled	30	10±	<10
Angling Quality (trout caught per hour)*	0.81	0.62	0.42	0.16	0.23

* Does not include catch-and-release.

Northern pike were discovered in Lake Davis in 1994. Upon this discovery the Department of Fish and Game set about planning for the eradication of this non-native species. To implement their plan of a chemical treatment of the lake there were several actions that affected the lower portions of Big Grizzly Creek below the dam.

Lake Davis and surrounding recreation facilities were closed to all public use from October 14, 1997 to July 10, 1998. Big Grizzly Creek is not located within this area, but this closure likely had a large impact on recreation and fishing on the creek, even though it was legally open to fishing on April 25, 1998. The action that had the most direct impact on the creek was the unexpected fish kill in the creek when un-neutralized rotenone escaped through the valve at the dam during the treatment. The most popular fishing area on the creek, near the confluence with the Feather River, was not affected by the chemical escape, but public perception of chemicals in the stream probably kept some anglers from fishing the creek during the Lake Davis closure. Both rainbow and brown trout, of various sizes, were planted in Big Grizzly Creek in July 1998 in an initial effort to restore the fishery. Additional stocking is scheduled for 1999.

ACKNOWLEDGEMENTS

The use counts, creel censuses, and interviews were conducted by the author, with thanks to Doug Rischbieter for his help on opening weekend and several other survey days. Thanks to Michael Serna for preparing the figures and Lori Miles who typed the text and tables.

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APPENDIX 1

SCHEDULE FOR BIG GRIZZLY CREEK RECREATION SURVEY APRIL 25, 1998 TO NOVEMBER 15, 1998

Date	Holiday = HD Weekend = WE Weekday = WD	Survey Stratum
April 25 April 26	WE WE	I I
May 4 May 16 May 24 May 25	WD WE HD HD	IV III II II
June 6 June 10 June 14 June 16 June 23 June 28	WE WD WE WD WD WE	III IV III IV IV III
July 4 July 5 July 6 July 11 July 29	HD HD WD WE WD	IX IX VI V VI
August 4 August 8 August 9 August 16 August 18	WD WE WE WE WD	VI V V V VI
September 5 September 17 September 27	HD WD WE	IX VIII VII
October 10 October 14 October 26	WE WD WD	VII VIII VIII
November 14	WE	VII

APPENDIX II

1998 USE COUNT SCHEDULE FOR BIG GRIZZLY CREEK

<u>Date</u>	<u>Daylight Hours</u>	<u>Use Count</u>		<u>Creel Census Time (approx.)</u>
		<u>Count</u>	<u>Time</u>	
April-August PDT	16-1/2	1 st	0700-0800	0800-1300
		2 nd	1000-1100	1400-1900
		3 rd	1300-1400	
		4 th	1600-1700	
		5 th	1900-2000	
September PDT	14	1 st	0730-0830	0830-1230
		2 nd	1000-1100	1330-1730
		3 rd	1230-1330	
		4 th	1500-1600	
		5 th	1730-1830	
October PDT	13	1 st	0800-0900	0900-1230
		2 nd	1000-1100	1300-1700
		3 rd	1230-1330	
		4 th	1500-1600	
		5 th	1700-1800	
November PST	12	1 st	0730-0830	0830-1130
		2 nd	0930-1030	1230-1530
		3 rd	1130-1230	
		4 th	1330-1430	
		5 th	1530-1630	

Big Grizzly Creek - Rainbow Trout Creeled, 1998

